

DT04 Rec'd PCT/PTO 1 2 JUL 2004

CLAIM AMENDMENTS

Amend claims: 1-14 and add new claims 17-22.

- 5 1. (Currently Amended) A process ~~Process~~ for the removal of carbon dioxide and optionally hydrogen sulphide and/or COS from a gas stream containing these compounds carbon dioxide by washing the gas with an aqueous washing solution containing between 15 and 45 parts by weight based on total solution of water, between 15 and 40 parts by weight based on total solution of sulfolane and between 30 and 60 parts by weight based
- 10 on total solution of a secondary or tertiary amine derived from ethanol amine, the amounts of water, sulfolane and amine together being 100 parts by weight, the process being carried out in the presence of a primary or secondary amine compound in an amount between 0.5 and 15 wt% based on water, sulfolane and amine.
- 15 2. (Currently Amended) The process of ~~Process according to~~ claim 1, ~~in which~~ wherein the gas stream is natural gas or synthesis gas.
3. (Currently Amended) The process of ~~Process according to~~ claim 1 or 2, ~~in which~~ wherein the amount of carbon dioxide is between 1 and 45 mol%, preferably between 5
- 20 and 25 mol%, the amount of hydrogen sulphide is between 0 and 25 mol%, preferably between 0 and 10 mol%, and the amount of COS is between 0 and 2 mol% (all % based on total gas stream).
4. (Currently Amended) The process ~~Process according to any of claims 1 to 3, in~~ which wherein the amount of water is between 20 and 45 parts by weight, the amount of
- 25 sulfolane is between 20 and 35 parts by weight, and the amount of amine is between 40 and 55 parts by weight, the amounts of water, sulfolane and amine together being 100 parts by weight.
- 30 5. (Currently Amended) The process ~~Process according to any of claims 1 to 4, in~~ which wherein the secondary amine derived from ethanolamine is DIPA, DEA or MMEA, preferably DIPA.

6. (Currently Amended) The process ~~Process according to any~~ of claims 1 to 4, in which wherein the tertiary amine derived from ethanolamine is MDEA or DMEA, preferably MDEA.
- 5 7. (Currently Amended) The process ~~Process according to any~~ of claims 1 to 6, in which wherein the primary or secondary amine compound has a pK_b (at 25°C in water) below 5, ~~preferably below 4.5~~.
- 10 8. (Currently Amended) The process ~~Process according to any~~ of claims 1 to 6, in which wherein the primary or secondary amine compound reacts at least twice as fast with carbon dioxide ~~then~~ than the amine reacts with carbon dioxide, the reaction velocity defined by the reaction velocity constant (at 25°C), ~~the primary or secondary amine compound preferably reacting five times as fast as the amine, more preferably reacting twenty times as fast as the amine.~~
- 15 9. (Currently Amended) The process ~~Process according to any~~ of claims 1 to 8, in which wherein the primary or secondary amine compound is piperazine, methyl ethanol amine, or (2-aminoethyl)ethanol amine, ~~especially piperazine~~.
- 20 10. (Currently Amended) The process ~~Process according to any~~ of claims 1 to 9, in which wherein the amount of primary or secondary amine compound is between 2.5 and 10 wt%.
- 25 11. (Currently Amended) The process ~~Process according to any~~ of claims 1 to 10, in which wherein the amount of primary or secondary amine compound is at least 0.8 mol/l, ~~especially between 1.0 mol/l and 3.0 mol/l, more especially between 1.0 mol and 3.0 mol piperazine/l.~~
- 30 12. (Currently Amended) The process ~~Process according to any~~ of claims 1 to 11, in which wherein the process is carried out at a temperature of at least 20°C, ~~preferably between 25 and 90 °C, more preferably between 40 and 65 °C at a pressure between 25 and 90 bara.~~

13. (Currently Amended) ~~The process~~ ~~Process according to any~~ of claims 1 to 12, ~~which wherein the~~ process also comprises a regeneration of the loaded solvent.

14. (Currently Amended) ~~The process~~ ~~Process according to any~~ of claims 1 to 13, in
5 ~~which wherein~~ the process is carried out at a pressure between 25 and 90 bara, in which
process the loaded solvent is flashed ~~of~~ at a pressure between 1 and 1 bara, followed by
regeneration at a pressure between 1 and 2 bara.

15. (Original) An absorbent liquid containing between 15 and 45 parts by weight
10 based on total solution of water, between 15 and 40 parts by weight based on total solution
of sulfolane and between 30 and 60 parts by weight based on total solution of a secondary
or tertiary amine derived from ethanol amine, the amounts of water, sulfolane and amine
together being 100 parts by weight and a primary or secondary amine compound in an
amount between 0.5 and 15 wt% based on water, sulfolane and amine.

15
16. (Currently Amended) ~~The An~~ absorbent liquid as defined in claim 15, wherein the
amount of water is between 20 and 45 parts by weight, the amount of sulfolane is between
20 and 35 parts by weight, and the amount of amine is between 40 and 55 parts by weight,
the amounts of water, sulfolane and amine together being 100 parts by weight. ~~the~~
20 ~~individual compounds further defined as in claims 4, 5, 6, 7, 8, 9, 10 or 11~~

17. (New) The absorbent liquid of claim 16, wherein the secondary amine derived from
ethanolamine is DIPA, DEA or MMEA.

18. (New) The absorbent liquid of claim 17, wherein the tertiary amine derived from
25 ethanolamine is MDEA or DEMEA.

19. (New) The absorbent liquid of claim 18, wherein the primary or secondary amine
compound has a pKb (at 25 wt% in water) below 5.

30 20. (New) The absorbent liquid of claim 19, wherein the primary or secondary amine
compound is piperazine, methyl ethanol amine, or (2-aminoethyl)ethanol amine.

21. (New) The absorbent liquid of claim 20, wherein the amount of primary or secondary amine compound is between 2.5 and 10 wt%.

22. (New) The absorbent liquid of claim 21, wherein the amount of primary or
5 secondary amine compound is at least 0.8 mol/l.